

# PATENT SPECIFICATION

1,110,233



DRAWINGS ATTACHED

1,110,233

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## COMPLETE SPECIFICATION

### Tagged Cords

We, PROTECTIVE PAPERS LIMITED, a British Company, of Riverside Works, Watchet, Somerset, and JAMES GANDY, a British Subject, of Protective Papers Limited, Riverside Works, Watchet, Somerset, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:

The invention relates to tagged cords. Such cords are used in stationery applications for holding together bundles of papers and as handles for carrier bags, boxes, cartons and the like.

According to the present invention there is provided a cord having a tag made of plastics material, said tag and cord being of non-unitary construction in that the plastics tag is attached to or formed onto a preformed cord, the tag having a projection which extends outwardly from the axis of that part of the cord in contact with the tag. Usually the cord has a tag at each end.

Preferably the tag is adhered to the cord by the plastics material of which it is made.

The tag may have a tubular part into which the cord is passed and projections which extend outwardly from the tubular part perpendicular to its axis.

Additionally the tag may be disposed transversely to the cord.

There is also provided according to the invention a method of making a tagged cord according to the present invention which method comprises forming a tag on a cord by moulding a plastics material into the shape of the tag on a preformed cord so that the tag is firmly adhered to the cord by the plastics material.

The tag may be formed by injection moulding a thermoplastic material e.g. polystyrene or a polyamide such as nylon.

In the preferred method of making tagged cords, cord is fed through a mould having the [Price 4s. 6d.]

shape desired for the tag, tags are formed at intervals along the cord by moulding a plastics material into the shape of the tag in the mould and the cord is cut into lengths to provide tagged cords.

A plurality of cords substantially parallel to one another may be fed through a plurality of moulds for the tags so as to provide tags at intervals along the cords.

The plurality of moulds may be adjacent to one another and joined together so that the cords are joined at the tags, after which joins between tags may be severed to separate the cords. However, it is preferred to mould each tag individually.

The invention includes carrier bags, boxes, cartons and the like provided with tagged cords as described herein.

As will be appreciated the type of cord will depend on the use to which the tagged cord is to be put.

Following is a description by way of example of methods of carrying the present invention into effect.

Tagged cords were made in the following way. An injection moulding machine was provided with a moulding station comprising a long hollow bar which could be opened to release moulded plastics material from its interior and having six holes extending transversely through the bar at equal intervals, adjacent transverse holes communicating with one another through the hollow bar. Six cords were fed from reels in parallel through the six transverse holes in the bar of the moulding station. The movement of the cords was stopped. Molten high impact polystyrene was injected into the bar so that the hollow interior was filled up and the six cords were provided with tags joined together. The bar was opened to release the moulded tags and the parallel cords were moved along a short-distance when the bar was again closed and another series of tags was provided as before. The cords were then passed to a cutting station where the plastic

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bar joining the cords was sawed through to separate adjacent tags and different cords from one another, and the short length of cord between adjacent tags on the same cord was also severed. The moulding operation was repeated on the cord so as to provide another series of tags spaced from the previous set by the length of cord desired for the finished tag cord. Again an adjacent set of tags was made a short distance from the previous set. Tags on adjacent cords were separated from one another at the cutting station by sawing through the bar and the cord was also cut between the tags which were close together on the same cord.

In this way the tagged cords were made in a substantially continuous operation.

The above method may be varied by employing six individual moulds for each cord instead of a single mould as specified. This eliminates the need for the cutting station.

A machine for making tagged cords by this second method will now be described with reference to the drawings accompanying the complete specification in which:

Figure 1 is an elevation of the machine, and Figure 2 is a plan view of the machine.

Thermoplastic moulding material is injected into a plurality of individual dies 1 which have been pre-loaded with cords 3, these dies 1 are held together under pressure by machine platens 2. When the thermoplastic moulding material has cooled and set, the machine platens 2 open, as do the dies 1 to which they are attached. The cords 3 are pulled in parallel through the open dies 1, by the drum 5 which is turned through 120 degrees by air cylinder 6 via crank 7 and clutch 8. The cords travel on the drum 5 in grooves 20, which are parallel to the axis of rotation of the drum, the cords being drawn on by lodgement of the moulded tags in specially designed indentations 21, in the walls of the grooves. The cords are held under tension by the manner of feeding them into the dies. Moulded tags 4 are now ready for pick-up by the drum on the next cycle. The cords 3 are then severed by revolving knife 9, driven by flexible shaft 10. This revolving knife 9 is moved across the drum 5 by air cylinder 11, to which a bar 12 is attached. This bar 12 is attached to a cross-member 13 by a pivot 14 at one end, and a plate 15 attached to the knife bearing assembly 16, at the other end.

When the knife assembly has been returned to its rest position as shown in Figure 2 the dies 1 are closed by platens 2, which are held under pressure. The cycle then repeats.

The injection of the material into the dies, and the timing, metering and plasticising of the material is carried out on a standard injection moulding machine. The machine also provides the pressure to hold the dies together during the injection moulding cycle.

Each die comprises 4 separate plates. The first plate controls the direction and supply of

molten plastic material to the second plate which acts similarly and directs the supply of molten plastic to third and fourth plates, which respectively contain engraved cavities, each cavity representing one-half of the desired moulding. The second plate performs an additional function in assisting the opening of the third and fourth plates after moulding has taken place.

The drawing accompanying the provisional specification shows a tagged cord made by the above methods. The cord 110 has tags 111 which comprise a tubular portion 112 through which the cord passes and rod like projections 113 extending outwardly from the tubular portion. The cord 110 is firmly adhered to the inside of the tubular portion 112 by the plastic material which flows into the cord during the moulding of the tag.

The invention is not restricted to the details of the foregoing examples. For instance the moulding station may be designed to accommodate any number of cords.

#### WHAT WE CLAIM IS:—

1. A cord having a tag made of plastics material, said tag and cord being of non-unitary construction in that the plastics tag is attached to or formed onto a preformed cord, the tag having a projection which extends outwardly from the axis of that part of the cord in contact with the tag.

2. A cord as claimed in claim 1, having a tag of plastics material at each end.

3. A cord as claimed in claim 1 or claim 2 wherein the tag is adhered to the cord by the plastics material of which it is made.

4. A cord as claimed in any one of the preceding claims wherein the tag (or tags) has (or have) a tubular part into which the cord is passed and projections which extend outwardly from the tubular part perpendicular to its axis.

5. A cord having a tag made of plastic material as claimed in any one of the preceding claims, the tag being disposed transversely to the cord.

6. A tagged cord substantially as hereinbefore described with reference to the drawing accompanying the provisional specification.

7. A method of making a tagged cord as claimed in any one of the preceding claims which method comprises forming a tag on a cord by moulding a plastics material into the shape of the tag on a preformed cord so that the tag is firmly adhered to the cord by the plastics material.

8. A method as claimed in claim 7 wherein the tag is formed by injection moulding of a thermoplastic material.

9. A method as claimed in claim 7, wherein the thermoplastic material is a polyamide.

10. A method as claimed in any one of claims 7 to 9 wherein cord is fed through a mould having the shape desired for the tag, tags are formed at intervals along the cord by

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moulding a plastics material into the shape of the tag in the mould and the cord is cut into lengths to provide tagged cords.

5      11. A method as claimed in claim 10 wherein a plurality of cords substantially parallel to one another are fed through a plurality of moulds for the tags so as to provide tags at intervals along the cords.

10     12. A method as claimed in claim 11, wherein the plurality of moulds are adjacent to one another and joined together so that the cords are joined at the tags, after which joins between tags are severed to separate the cords.

15     13. A method as claimed in claim 11 wherein in each tag is moulded individually.

14. A method of forming tagged cords substantially as hereinbefore described with reference to the drawing accompanying the complete specification.

20     15. Tagged cords formed by the method claimed in any one of claims 7 to 12.

16. Tagged cords formed by the method claimed in claim 13 or claim 14.

17. Carrier bags, boxes, cartons and the like, having a handle comprising a tagged cord as claimed in any one of claims 2 to 6 said cord having a tag at each end. 25

18. Carrier bags, boxes, cartons and the like having a handle comprising a tagged cord as claimed in claim 15, said cord having a tag at each end. 30

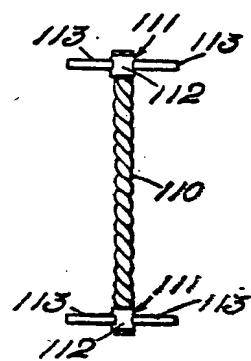
19. Carrier bags, boxes, cartons and the like having a handle comprising a tagged cord as claimed in claim 16.

20. Apparatus for making tagged cords substantially as herein before described with reference to the drawing accompanying the complete specification. 35

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FIG. 1.

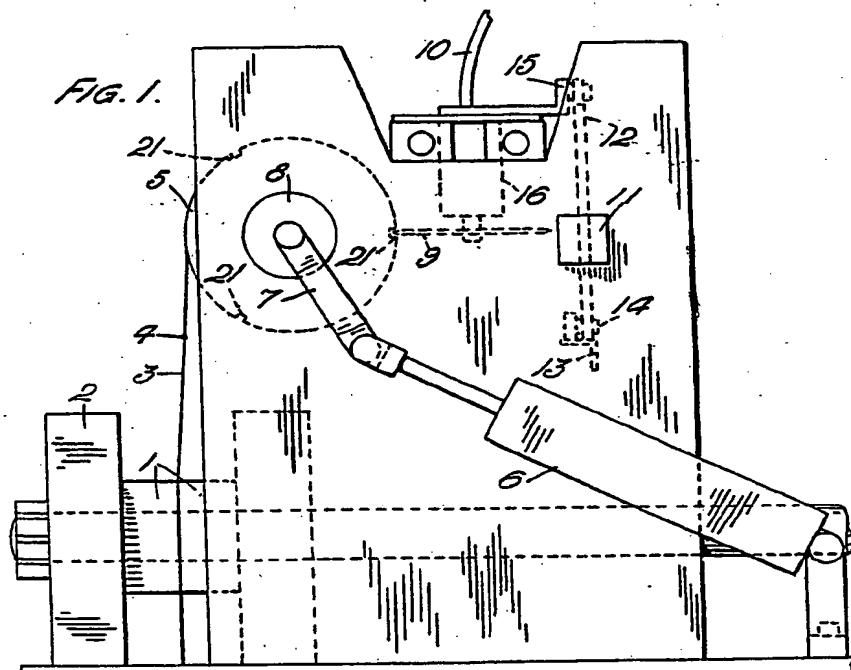
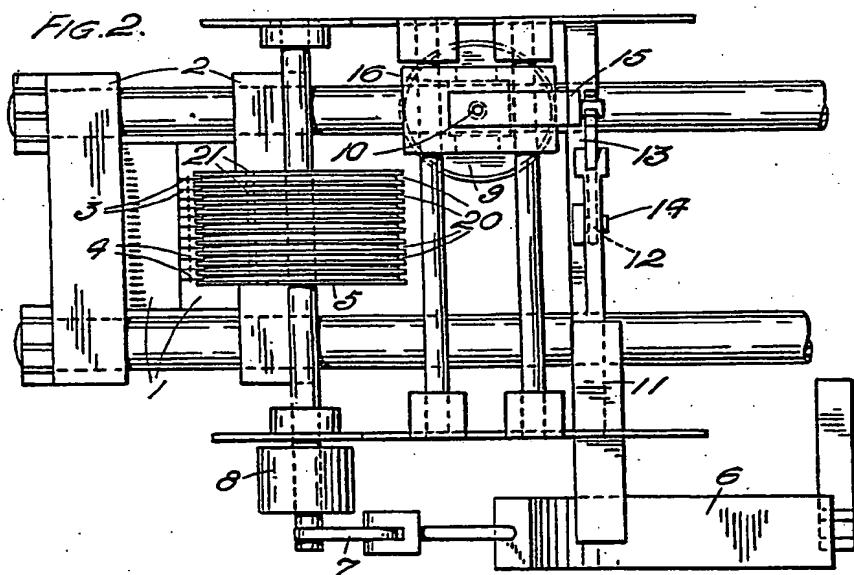


FIG. 2.



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